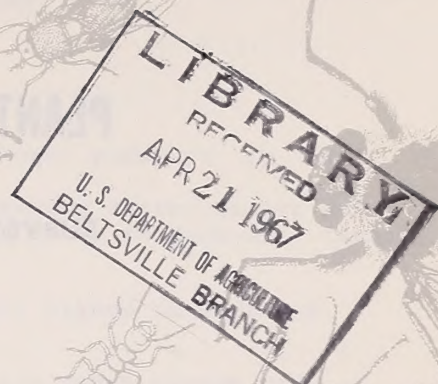


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Cooperative **ECONOMIC INSECT REPORT**

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearinghouse and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG and APPLE GRAIN APHID on small grains in southwest Missouri. (p. 275).

ALFALFA WEEVIL reported from 15 States this period. Causing severe damage and requiring control in some areas. PEA APHID populations heavy in Missouri, Kansas, Oklahoma, and Arizona. (pp. 277-278).

MEXICAN BEAN BEETLE overwintering populations 10 percent higher in parts of Nebraska. (p. 280).

Record high populations for March of CITRUS RUST MITE and TEXAS CITRUS MITE on citrus in Florida. (p. 281).

EASTERN TENT CATERPILLAR larvae appearing on fruit trees and wild cherry from Virginia to Oklahoma. (p. 283).

Detection

A WALSHIID MOTH was collected in Nebraska for a new State record. (p. 278).

For new county records, see page 286.

Some First Occurrences of Season

EUROPEAN CORN BORER, MEADOW SPITTLEBUG, APPLE APHID, and ROSY APPLE APHID in Maryland; MEADOW SPITTLEBUG and EASTERN TENT CATERPILLAR in Ohio; ARMYWORM in Wisconsin; AEDES MOSQUITOES in Minnesota; ELM LEAF BEETLE in Oklahoma; PINK BOLLWORM in Arizona; TOBACCO BUDWORM in Alabama and HICKORY SHUCKWORM in Georgia.

Prediction

CHINCH BUG could develop into economic populations in Nebraska if weather continues dry. (p. 276).

Special Reports

Summary of Insect Conditions in the United States - 1966

Households and Structures (pp. 287-288)

Stored Products (pp. 288-289)

Beneficial Insects (pp. 289-291)

Federal and State Plant Protection Programs (pp. 291-294)

Weather of the Year (pp. 295-297)

List of Contributors (pp. 298-299)

Distribution of a Japanese Weevil (map). (p. 300).

Reports in this issue are for week ending April 7 unless otherwise indicated.

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WEATHER OF THE WEEK ENDING APRIL 10

HIGHLIGHTS: Third warm week in most central areas as the struggle between winter and summer continued; spotty showers, thunderstorms, some hail, and a few tornadoes marked the battle line.

PRECIPITATION: Early week showers were light from eastern Kansas to New England. Weekend frontal activity set off substantial showers and thunderstorms, some with hail, from Oklahoma to the Great Lakes and New England. Showers exceeded 4 inches locally in Oklahoma. A tornado was seen Sunday near Catoosa, Oklahoma, as violent winds and hail lashed parts of the Sooner State. An inch or more of rain fell over a belt extending from Oklahoma to southern New England. Lighter amounts fell north of the rain belt but little or none to the southward. Some of the Gulf States have received no rain of consequence in 4 weeks and the spring fire hazard is high. Soil moisture is short over much of the western Plains; winds, 25 to

Weather continued on page 286.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (*Schizaphis graminum*) - ALABAMA - Heavy on a 20-acre field of *Monantha* vetch in Escambia County. (Simpson et al.). ARKANSAS - Low in wheat surveyed in southwest, northeast, and west areas. (Ark. Ins. Sur.). OKLAHOMA - Decreased in some areas due to parasites (mostly a BRACONID (*Lysiphlebus testaceipes*)) and predators. Scattered moderate to heavy populations continue in Cleveland, Canadian, Kingfisher, Garvin, Murray, Mayes, and Ottawa Counties. Heavy counts in Major County are spotty, but range up to 2,000 per linear foot in a few areas. (Okla. Coop. Sur.). MISSOURI - This species and *Rhopalosiphum fitchii* damaged orchard grass and brome grass throughout the southwest area. Ranged from 100 to several thousand per square foot of orchard grass. Ranged 50-4,000 per foot of row of wheat and barley. (Munson). KANSAS - Light to moderate in many wheat fields in southeast, south-central, and southwest districts. Ranged from 60 per 100 sweeps in Greenwood County to 5 per 10 sweeps in Barber, Comanche, and Clark Counties. (Simpson). NEBRASKA - Surveys negative in northwest area. (Anderson).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - FLORIDA - Nymphs and adults common on alfalfa at Gainesville. (Mead). MISSISSIPPI - Light on alfalfa in Pontotoc County. (Dinkins). ARKANSAS - Low in Faulkner, Conway, and Logan Counties. May build up if dry weather continues. (Ark. Ins. Sur.). OKLAHOMA - Ranged 5-310 per 10 sweeps on alfalfa in northeast and east-central areas. Light in other areas. Parasitized aphids noted in Tulsa County. (Okla. Coop. Sur.).

CORN LEAF APHID (*Rhopalosiphum maidis*) - ARIZONA - Light to moderate on small grains in Yuma, Maricopa, Pinal, and Graham Counties. Heavy and damaging wheat in Kansas Settlement area of Cochise County; controls required. (Ariz. Coop. Sur.). NEW MEXICO - Light to medium, 25 winged adults per 50 sweeps, in Dona Ana County barley. (Elson, Nielsen). MISSISSIPPI - Light on virus-infected Johnson grass around newly planted cornfields in Yazoo County. (Dinkins).

SIX-SPOTTED LEAFHOPPER (*Macrosteles fascifrons*) - WISCONSIN - Up to 8 per 100 sweeps in Crawford County. None found 25 miles east of the Mississippi River. Occasional females present. (Wis. Ins. Sur.). KANSAS - Light to moderate on wheat in southern half of State. (Simpson). FLORIDA - Up to 81 adults per 100 sweeps on oats; common on rye at Gainesville, Alachua County. (Mead).

BET LEAFHOPPER (*Circulifer tenellus*) - CALIFORNIA - Nymphs found throughout breeding grounds from Los Banos Hills south through Kern County; none found north of Los Banos Hills. Heaviest population remains in the Pyramid Hills near the Kings and Kern County line; largest acreage for potential reproduction from Belridge to Taft in Kern County. With warm weather, populations should be heavy enough to necessitate treatment within a few days. (Cal. Coop. Rpt.). ARIZONA - Adults light on sugarbeet seedlings near Safford in Graham County. (Ariz. Coop. Sur.).

POTATO PSYLLID (*Paratrioza cockerelli*) - ARIZONA - Nymphs increased on potatoes and required treatment in Maricopa and Pinal Counties. Light; controlled in Yuma County. (Ariz. Coop. Sur.).

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - NEVADA - Larvae caused medium damage to alfalfa in Smith Valley, Lyon County. (Batchelder, Martinelli). COLORADO - Larvae, 3-9 per square foot in new seedling alfalfa near Platteville, Weld County. Soil was powder dry in top 6-8 inches. Also damaging winter wheat near Ault, Weld County. (Urano, Jenkins).

ARMYWORM (*Pseudaletia unipuncta*) - WISCONSIN - Moths appearing in Madison black-light trap; 1 collected April 2 and 2 on April 4. (Wis. Ins. Sur.).

TOBACCO BUDWORM (*Heliothis virescens*) - ALABAMA - First adults of season observed in Mobile County. One adult collected in Lee County. (McQueen).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - WISCONSIN - Survival of overwintering larvae 88 percent in southwestern counties. (Wis. Ins. Sur.). MARYLAND - First pupa of season found April 6 near Centreville, Queen Annes County. (U. Md., Ent. Dept.). DELAWARE - No pupation to date. (Burbutis).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - OKLAHOMA - Larvae present in 10 percent of cornstalks checked in Beckham County. (Okla. Coop. Sur.).

FALL ARMYWORM (Spodoptera frugiperda) - FLORIDA - Infesting sweetcorn 2-6 inches tall and damage noticed where controls not applied at Sanford, Seminole County. (Greene).

SMALL GRAINS

BROWN WHEAT MITE (Petrobia latens) - OKLAHOMA - Continues active in wheat in western areas; ranged 300-900 per linear foot in Major County. (Okla. Coop. Sur.). KANSAS - Low in eastern area due to recent rains. Ranged 300-800 per linear foot in Sedgwick, Sumner, Harper, Baker, and Comanche Counties. Counts of 2,000-3,000 per linear foot reported from Stevens County. Egg laying continues. (Simpson). COLORADO - Ranged 1-6 per leaf near Ault, Weld County; numerous in Logan County. (Jenkins, Read). UTAH - Active but not numerous on winter wheat on Levan Ridge, Juab County. (Knowlton).

PALE WESTERN CUTWORM (Agrotis orthogonia) - KANSAS - Averaged less than 2 per square foot on wheat in Finney, Scott, and Logan Counties. (Simpson). NEBRASKA - Surveys negative in northwest area. (Anderson). COLORADO - Larvae damaging winter wheat near Ault, Weld County; 2-5 per linear foot. (Jenkins).

ENGLISH GRAIN APHID (Macrosiphum avenae) - FLORIDA - Nymphs and adults common on rye and oats; 200-300 per 100 sweeps at Gainesville, Alachua County. (Mead). MISSISSIPPI - Moderate, some damage on small grains in Webster and Oktibbeha Counties. (Dinkins). ARKANSAS - Low in wheat in southwest, northeast, and west areas. (Ark. Ins. Sur.). OKLAHOMA - Present in most wheat fields in northeast and east-central areas; ranged 3-35 per linear foot. (Okla. Coop. Sur.). KANSAS - Low, 0-10 per linear foot in most southeast, south-central, and southwest area wheat. (Simpson). WISCONSIN - Winged forms swept from nearly all grassy areas. Up to 5 per 100 sweeps present in wheat and rye plantings from the Mississippi River to Rock County. (Wis. Ins. Sur.).

CHINCH BUG (Blissus leucopterus) - KANSAS - Adults, 1-10 per linear foot, on wheat in southeast and south-central areas. (Simpson). NEBRASKA - Overwintering populations average 180-245 per square foot in Lancaster, Gage, and Jefferson Counties. Economic populations expected in these areas if weather continues dry. (Rhine).

LEAF-FOOTED BUG (Leptoglossus phyllopus) - FLORIDA - Up to 3-4 adults per 100 feet of row on oats and rye; occasional high concentrations on oats at Gainesville, Alachua County. (Mead).

STINK BUGS - FLORIDA - Nezara viridula and Euschistus servus adults averaging 3 per 100 sweeps on rye and oats at Gainesville, Alachua County. (Mead). ALABAMA - N. viridula, E. servus, and Acrosternum hilare adults light, feeding on wheat heads and crimson clover in Mobile, Baldwin, and Escambia Counties. (McQueen).

A LEAFHOPPER (Graminella nigrifrons) - FLORIDA - Up to 68 adults per 100 sweeps taken on oats; observed on rye at Gainesville, Alachua County. (Mead).

TURF, PASTURES, RANGELAND

A PLANT BUG (Irbisia californica) - CALIFORNIA - Light to medium on native grasses at Crestmore, San Bernardino County. (Cal. Coop. Rpt.).

BANKS GRASS MITE (Oligonychus pratensis) - NEVADA - Medium on timothy in Smith Valley, Lyon County. (Farias).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - UTAH - Adults active on warm days at Willard, Box Elder County. (Knowlton). COLORADO - Trace numbers of larvae on alfalfa 2-3 inches high. Adult feeding very evident in Larimer County. (Simpson). SOUTH DAKOTA - Adults 1 per square yard of alfalfa near Spearfish, Lawrence County. (Jones). KANSAS - Adults 5-10 and larvae 10-18 per 10 sweeps in Finney County. (Simpson). MISSOURI - Very high in southeast area; many fields treated. No larvae collected in the southwest area this period. (Munson). ARKANSAS - Feeding signs on 50-75 percent of alfalfa stems in Faulkner and Conway Counties. Various sized larvae present, but no adults found. (Ark. Ins. Sur.). MISSISSIPPI - Averaged 99 larvae per square foot of untreated alfalfa in Pontotoc County. Averaged 88 per square foot of alfalfa flame-treated in January. First-generation larvae pupating. (Dinkins). ALABAMA - Larval damage heavy on alfalfa in Limestone and Tallapoosa Counties. (Agee, Sowell). Larvae collected from Regal clover at the Fairhope Substation on March 10. Feeding damage light to medium on Regal clover in Baldwin, Wilcox, and Elmore Counties. Det. by D. M. Anderson. (McQueen). SOUTH CAROLINA - Pupae present; adults expected by April 12. (Thomas). VIRGINIA - All stages of larvae in most fields checked in Amelia, Chesterfield, Dinwiddie, and Nottoway Counties; averaged 8 larvae and 3 adults per 10 sweeps. (Isakson). MARYLAND - First and second instars infested 44 of 50 alfalfa stems at Fairland, Montgomery County. Feeding injury noticeable on alfalfa in Montgomery and Queen Annes Counties. Averaged 1 adult per 10 sweeps on alfalfa at Fairland, Montgomery County. (U. Md., Ent. Dept.). DELAWARE - Larvae increased on alfalfa; averaged 14 per 10 stems in New Castle and Kent Counties and over 30 per 10 stems in Sussex County, with light to moderate injury. (Burbutis). INDIANA - Deposited 323 viable eggs per square foot by February 15 at Laconia, Harrison County. (Hintz). Larvae present in southern two-thirds of State, however, economic infestations restricted to southern third, while up to 20 percent of alfalfa infested in central districts. Larvae ranged 64-463 per square foot and infested 40-100 percent of 5-7 inch alfalfa; all larval stages present. In central areas little change since last period. New records are Clinton, Tipton, Howard, Miami, Cass, Carroll, and White Counties. (Huber). OHIO - First and second instars common in alfalfa terminals in southeast area. Infested 20-60 percent of stems with 1-8 larvae per terminal in 3 fields in Jackson, Meigs, and Perry Counties. Damage light on 3-6 inch alfalfa. (Rose).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Decreasing rapidly on alfalfa in Yuma, Maricopa, and Pinal Counties. Some controls were necessary during past period in Maricopa and Pinal Counties. (Ariz. Coop. Sur.).

CLOVER LEAF WEEVIL (Hypera punctata) - NEVADA - Larvae light to medium on alfalfa in Smith Valley, Lyon County; pupation beginning. (Batchelder, Martinelli). KANSAS - Up to 12 larvae per square foot reported in Barton County; less than 1 larva per square foot found in southeast and south-central alfalfa. (Simpson). ILLINOIS - Damage moderate; ranged 1-35 per sweep in southeast area, and up to 6 per sweep in the southwest area. (Ill. Ins. Rpt.). INDIANA - Early instars heavier than past few years on clover and alfalfa in southern two-thirds of State. Disease organisms that usually control this insect, not evident. (Huber). OHIO - Hatch in progress; larvae in Champaign County. (Rinehart, Blair). MARYLAND - Larvae damaged red clover near Centreville, Queen Annes County. (U. Md., Ent. Dept.).

CLOVER HEAD WEEVIL (Hypera meles) - ALABAMA - Larvae heavy on developing seed heads of crimson clover in central area. (McQueen).

CLOVER ROOT CURCULIO (Sitona hispidula) - MARYLAND - Few adults swept from alfalfa in Montgomery and Queen Annes Counties. (U. Md., Ent. Dept.).

BEAN LEAF BEETLE (Cerotoma trifurcata) - ARKANSAS - Light on most legumes. (Ark. Ins. Sur.).

PEA APHID (Acyrtosiphon pisum) - NEVADA - First occurrence of season in Smith Valley, Lyon County; numbers very light. (Batchelder, Martinelli). ARIZONA - Appearing heavy in many alfalfa fields of Yuma, Maricopa, and Pinal Counties. Light in Graham and Cochise Counties. (Ariz. Coop. Sur.). NEW MEXICO - Generally light on alfalfa. (N. M. Coop. Rpt.). OKLAHOMA - Up to 8,000 per 10 sweeps in alfalfa in Muskogee County; populations high in several other east-central counties. Parasites, probably Aphidius pulcher and other species, are numerous in some areas. (Okla. Coop. Sur.). KANSAS - Present in all alfalfa fields checked; up to 2,500 per 10 sweeps in south-central area. (Simpson). ARKANSAS - Medium to heavy, but noneconomic on alfalfa, crimson clover, and vetch in all areas. A few fields in Logan County treated. (Ark. Ins. Sur.). MISSOURI - Unusually high in southwest area; weather dry and warm in this area. Ranged 210-1,000 per 10 sweeps of alfalfa and clovers. Damage to new alfalfa observed. (Munson). ILLINOIS - Parasitized in many fields in southeast and southwest districts; ranged 20-90 per sweep in southeast and up to 300 per sweep in the southwest. (Moore). WISCONSIN - Eggs hatched in most alfalfa fields in southern counties. (Wis. Ins. Sur.). INDIANA - All stages on alfalfa in southern two-thirds of State; ranged 8-47 per sweep in south-central and southeastern districts. (Huber). OHIO - Appearing on alfalfa in southeast area. (Niemczyk, Flessel). DELAWARE - Increased, averaged 4 per alfalfa stem in 1 area of Sussex County. (Burbutis). MARYLAND - Less than 1 per sweep on alfalfa in Montgomery and Queen Annes Counties. (U. Md., Ent. Dept.). VIRGINIA - Light on alfalfa in Amelia, Chesterfield, Dinwiddie, and Nottoway Counties. (Isakson). FLORIDA - Nymphs and adults common on alfalfa at Gainesville, Alachua County. (Mead). MISSISSIPPI - Light on alfalfa in Pontotoc County. (Dinkins).

TARNISHED PLANT BUG (Lygus lineolaris) - ARKANSAS - Low, 30-40 in 100 sweeps on alfalfa and clover. A few nymphs present. (Ark. Ins. Sur.). OKLAHOMA - Ranged 2-14 per 10 sweeps in alfalfa checked in northeast and east-central areas. (Okla. Coop. Sur.). KANSAS - Ranged 5-15 per 10 sweeps in south area. (Simpson). NEW MEXICO - Lygus spp. averaged from 2-5 to 10-15 adults and nymphs per 25 sweeps in Chaves County alfalfa fields. (Mathews).

MEADOW SPITTLEBUG (Philaenus spumarius) - INDIANA - Early instars remain common in southern areas; ranged 1-64 per square foot in southeastern district clover and alfalfa. First nymphs of season in Dubois, Washington, and Jackson Counties on March 29. (Huber). OHIO - First nymphs of season in Meigs County on March 29. (Niemczyk, Flessel). MARYLAND - First nymphs of season observed April 6 on alfalfa in Montgomery and Queen Annes Counties. (U. Md., Ent. Dept.).

GREEN CLOVERWORM (Plathypena scabra) - ALABAMA - Larvae light to medium on crimson clover and vetch in Mobile, Baldwin, and Escambia Counties. (McQueen). ARKANSAS - Larvae light in most alfalfa, vetch, and clover in all south areas. (Ark. Ins. Sur.).

VARIEGATED CUTWORM (Peridroma saucia) - NEW MEXICO - Light; alfalfa less damaged than past period in Eddy and Chaves Counties. (Mathews).

MITES - GEORGIA - Undetermined species light to very heavy on crimson and white clover in Early and Dougherty Counties. (Hays, Morgan).

A WALSHIID MOTH (Walshia miscecolorella) - NEBRASKA - Collected in sweetclover during September and October in 1966 in Lancaster, Saunders, Cass, Otoe, and Johnson Counties. Seriously damaged some sweetclover breeding nurseries. Det. by R. W. Hodges. A new State record. (Manglitz).

COTTON

COTTON APHID (Aphis gossypii) - ALABAMA - Winged adults migrating to young two-leaf cotton on a large planting in Montgomery County. (McQueen).

TOBACCO

FLEA BEETLES - GEORGIA - Undetermined species light to moderate in Tift, Colquitt, Cook, and Atkinson Counties. (Miles, French).

WIREWORMS - GEORGIA - Undetermined species heavy in Cook, Tift, and Berrien Counties. (Girardeau, Wood).

APHIDS - GEORGIA - Undetermined species light in Cook County. (Miles, Smith).

SUGARBEETS

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - COLORADO - Larvae found in some fields at depths of 6-8 inches. An early emergence of adults could occur in Weld County. (Jenkins).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - ALABAMA - A few overwintered adults observed on potatoes in Baldwin County. First egg laying observed this period. (Garrett). OKLAHOMA - Adults active on potatoes in home gardens in Payne and Creek Counties. (Okla. Coop. Sur.).

LEAF-FOOTED BUG (Leptoglossus phyllopus) - ALABAMA - Adults, 2-4 per plant, feeding on top growth of potatoes in several fields in Baldwin County. Causing plants to wilt, due to drought conditions. (Turner et al.).

POTATO APHID (Macrosiphum euphorbiae) - FLORIDA - All stages on stems and leaves of tomato plants at Reddick, Marion County. (Graham). ALABAMA - Light on potatoes in Mobile, Baldwin, and Escambia Counties. Some fields treated. (McQueen).

TOBACCO THRIPS (Frankliniella fusca) - ALABAMA - Light on potatoes in Mobile, Baldwin, and Escambia Counties. Some fields treated. (McQueen).

COLE CROPS

CABBAGE LOOPER (Trichoplusia ni) - FLORIDA - Egg numbers greatly decreased during past 2 weeks; larval populations still high on cabbage at Sanford, Seminole County. (Greene). ALABAMA - Larvae, medium to heavy in a 24-acre planting of maturing cabbage in Mobile County; population controlled with treatment. (Mavrat et al.).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Heavy on cauliflower heads; serious damage in areas of Yuma County. (Ariz. Coop. Sur.).

CUCURBITS

SQUASH BEETLE (Epilachna borealis) - ALABAMA - Numerous adults observed in hibernation under bark of large pecan tree at Irvington, Mobile County. (Deakle et al.).

MELON APHID (Aphis gossypii) - ARIZONA - Heavy on cantaloups in Yuma County. Additional fields treated. (Ariz. Coop. Sur.).

GENERAL VEGETABLES

MEXICAN BEAN BEETLE (Epilachna varivestis) - ALABAMA - Few adults emerged from winter hibernation in Mobile County. (Seibels). NEBRASKA - Overwintering populations 10 percent higher than 1966 in Morrill, Scotts Bluff, and Sioux Counties. Some controls will probably be needed. (Hagen).

FLEA BEETLES - GEORGIA - Undetermined species light to moderate in Tift, Colquitt, Cook, and Atkinson Counties. (Miles, French).

WHITE GRUBS - SOUTH CAROLINA - Undetermined species damaged sweetpotatoes. (Thomas, March 13).

CABBAGE LOOPER (Trichoplusia ni) - NEW MEXICO - Spotty on lettuce; eggs abundant in some Dona Ana County fields. (Elson, Nielsen).

GREEN PEACH APHID (Myzus persicae) - OKLAHOMA - Ranged up to 1,000 on larger leaves in a commercial spinach field in Bixby area of Tulsa County. Aphids killing some plants. Numbers much lighter in other fields in Tulsa and Wagoner Counties. (Okla. Coop. Sur.).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - NEW MEXICO - Limited controls begun on onions in Dona Ana County. (Elson et al.).

SPIDER MITES (Tetranychus spp.) - OKLAHOMA - Heavy populations damaging sweetpotatoes in a greenhouse in Payne County. (Okla. Coop. Sur.).

BULB MITE (Rhizoglyphus echinopus) - CALIFORNIA - Heavy on stems and bulbs of garlic in Holtville, Imperial County. (Cal. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

EUROPEAN RED MITE (Panonychus ulmi) - NEW JERSEY - Usual abundance of overwintering eggs found in Burlington, Camden, Gloucester, Atlantic, and Cumberland County orchards; no hatch observed. (Ins.-Dis. Newsltr.). CONNECTICUT - Eggs abundant in most areas. (Savos).

SPIDER MITES (Tetranychus spp.) - COLORADO - Active, moderate to heavy populations in a few apple orchards in Mesa County area. Delayed dormant sprays being applied. (Bulla).

APPLE APHID (Aphis pomi) - COLORADO - Nymphs abundant in some apple orchards in Mesa County. (Bulla). INDIANA - Hatching nearly complete in Vincennes area; some nymphs nearing maturity. (Dolphin, April 3). MARYLAND - First nymphs of season found April 1 on apple at Hancock, Washington County. (U. Md., Ent. Dept.).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - NEW JERSEY - Abundant in most orchards. (Ins.-Dis. Newsltr.). OHIO - Infested approximately 70 percent of budding leaf clusters in an orchard in Jackson County. (Rose). WISCONSIN - First instar nymphs beginning to congregate in commercial apple orchards. (Wis. Ins. Sur.).

ROSY APPLE APHID (Dysaphis plantaginea) - MARYLAND - First nymphs of season found April 1 on apple at Hancock, Washington County. (U. Md., Ent. Dept.).

PEAR PSYLLA (Psylla pyricola) - CONNECTICUT - Adults active and laying eggs at Storrs. Both adults and eggs easy to find in an abandoned orchard. (Savos).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - ARIZONA - Feeding on blossoms of pears, apples, and peaches in Stewart area of Cochise County; damage severe. (Ariz. Coop. Sur.).

MAY BEETLES - GEORGIA - Extensively damaged pecan foliage in Jasper and Upson Counties. (Tanner, Burns).

SAY STINK BUG (Chlorochroa sayi) - ARIZONA - Light on fruit tree blossoms in Lone Star area of Graham County. (Ariz. Coop. Sur.).

TARNISHED PLANT BUG (Lygus lineolaris) - INDIANA - Adults feeding on pink peach buds; also present in apple trees at Vincennes. (Dolphin, April 3).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - INDIANA - Adults of overwintering generation taken from bait traps at Vincennes. (Dolphin, April 3).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - COLORADO - Collected in bait traps March 28 at Palisade, Mesa County; ranged 1-11 moths per 5 traps. (Bulla).

CODLING MOTH (Carpocapsa pomonella) - INDIANA - Pupation underway at Vincennes although most immatures still in prepupal stage. (Dolphin, April 3).

LESSER PEACH TREE BORER (Synanthedon pictipes) - INDIANA - Larvae feeding in cankers of peach trunks and scaffold branches at Vincennes. (Dolphin, April 3).

LESSER APPLEWORM (Grapholitha prunivora) - INDIANA - Two adults found in bait trap at Vincennes. (Dolphin, April 3).

A NOCTUID MOTH (Lithophane unimoda) - OHIO - Hatch began in Wayne County, April 6. (Rings).

A CLIMBING CUTWORM (Eupsilia morrisoni) - OHIO - Hatch began in Wayne County April 6. (Rings).

HICKORY SHUCKWORM (Laspeyresia caryana) - ALABAMA - Larval populations high in pecan shucks on ground in Baldwin, Mobile, and Escambia Counties. (Robinson et al.). GEORGIA - First moth of season collected in blacklight trap March 21. Collections increasing daily in Dougherty County. (Osburn).

PECAN NUT CASEBEARER (Acrobasis caryae) - ALABAMA - Overwintered larvae light to medium in a pecan orchard in Mobile County. (Garrett et al.). GEORGIA - Moderate in Dougherty County. (Hays).

PECAN LEAF CASEBEARER (Acrobasis juglandis) - GEORGIA - Moderate in Dougherty County. (Hays).

CITRUS

Citrus Insect Situation in Florida - End of March - CITRUS RUST MITE (Phyllocop-truta oleivora) On leaves: Infested 68 percent of groves (norm 56 percent); 59 percent economic (norm 35 percent). On fruit: Infested 82 percent of groves (norm 44 percent); 57 percent economic (norm 26 percent). Population on leaves decreased slightly from the record high level at mid-March, but increased on fruit to a new 16 year record high for March. Although a downward trend is expected in April, the statewide population will continue to be in the high range. All districts high. North district has more mites on fruit than on leaves. TEXAS CITRUS MITE (Eutetranychus banksi) infested 56 percent of groves (norm 32 percent); 36 percent economic (norm 12 percent). Population established a new record high level for March. Little change is expected in the statewide population. Infestations will vary greatly among districts and groves. Highest districts west, central, and north. CITRUS RED MITE (Panonychus citri) infested 59 percent of groves (norm 41 percent); 27 percent economic (norm 16 percent). Although more abundant than usual for March, it is still at a moderate level. Slight increase is expected. Infestations will be localized. Highest districts west, north, and central. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) is present in only 4

percent of survey groves and all infestations are light. This below-normal condition will continue. GLOVER SCALE (Lepidosaphes gloverii) infested 84 percent of groves; 20 percent economic. Population is near the normal of recent years. It will continue in high range with slight increase expected. Highest districts east, south, and central. PURPLE SCALE (L. beckii) infested 78 percent of groves; 9 percent economic. Population is below normal and in moderate range with slight increase expected. Highest district central. YELLOW SCALE (Aonidiella citrina) infested 77 percent of groves; 6 percent economic. Population is near normal and in a moderate range. Little change expected. Highest district central. CHAFF SCALE (Parlatoria pergandii) infested 61 percent of groves; 6 percent economic. Population is below normal and in the low range. Slight increase expected. Highest district central. BLACK SCALE (Saissetia oleae) infested 24 percent of groves; 9 percent economic. Population is below normal and very low. It will start to increase in April. All districts low. WHITEFLIES infested 65 percent of groves; 15 percent economic. Population is near normal. Adults will be very numerous in April. APHIDS are reaching peak population about a week earlier than normal and will decrease in April.

ARMORED SCALES - CALIFORNIA - Lepidosaphes beckii and Aonidiella aurantii heavy on dooryard citrus at San Diego, San Diego County. (Cal. Coop. Rpt.).

SPIDER MITES - CALIFORNIA - Eotetranychus, probably E. sexmaculatus heavy on citrus trees in Santa Cruz, Santa Cruz County. (Cal. Coop. Rpt.). ARIZONA - E. yumensis light on citrus in Yuma County. One area of Yuma Mesa required treatment. (Ariz. Coop. Sur.).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Citrus in Yuma and Maricopa Counties still require controls. Some decrease in Yuma County. (Ariz. Coop. Sur.).

SMALL FRUITS

ROSE SCALE (Aulacaspis rosae) - CALIFORNIA - Heavy on boysenberry plantings in Cressy, Merced County. (Cal. Coop. Rpt.).

STRAWBERRY APHID (Chaetosiphon fragaefolii) - MARYLAND - Light on strawberries at Fairland, Montgomery County. (U. Md., Ent. Dept.).

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - NEW JERSEY - Active on new growth of strawberries. (Ins.-Dis. Newsltr.).

ORNAMENTALS

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - OKLAHOMA - Adults emerging from ornamental pines in Stillwater, Payne County. (Okla. Coop. Sur.).

APHIDS - FLORIDA - Myzus hemerocallis adults causing light damage to 50 percent of 100,000 day lily plants at Dover, Polk County. (Simmons). ARIZONA - Acyrtosiphon barri damaged calendula in yards throughout Yuma, Yuma County. (Ariz. Coop. Sur.). NEVADA - Cinara tujafilina heavy on arborvitae in Reno, Washoe County; honeydew heavy. (Gallaway). CALIFORNIA - Macrosiphum euphorbiae heavy on saxifraga plants at Vallejo, Solano County. M. rosae heavy on rose bushes at Vallejo; species has been noticeably absent in many locations this spring. (Cal. Coop. Rpt.).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - NEW MEXICO - Light to moderately heavy on pinyon and ponderosa pine at shopping center in Albuquerque, Bernalillo County. (Heninger).

EUONYMUS SCALE (Unaspis euonymi) - NEW MEXICO - Medium to very heavy on euonymus in Albuquerque, Bernalillo County. Some plants dying. (Heninger).

CACTUS SCALE (Diaspis echinocacti) - ARIZONA - Heavy on cactus in Yuma and Maricopa Counties. Heaviest on Echinocactus spp. (Ariz. Coop. Sur.).

AN ARMORED SCALE (Phenacaspis cockerelli) - FLORIDA - All stages severe on bird-of-paradise plants at Holly Hill, Volusia County, and Oviedo, Seminole County. (Kipp, March 30).

NATIVE HOLLY LEAF MINER (Phytomyza ilicicola) - MARYLAND - Above normal on American holly in central sections. Pupation well advanced at College Park. (U. Md., Ent. Dept.).

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - CALIFORNIA - Heavy on erythrina nursery stock at El Centro, Imperial County. (Cal. Coop. Rpt.).

SPRUCE SPIDER MITE (Oligonychus ununguis) - MARYLAND - Hatching on spruce at College Park, Prince Georges County. (U. Md., Ent. Dept.).

PRIVET MITE (Brevipalpus obovatus) - CALIFORNIA - Medium on gazania nursery stock at Vista, San Diego County; species occurring on more hosts than usual. (Cal. Coop. Rpt.).

AN ERIOPHYID MITE (Eriophyes insidiosus) - CALIFORNIA - Taken from flowering peach in Madera, Madera County. This is new county record and most northerly occurrence. No disease associated with species north of Tehachapi Mountains. (Cal. Coop. Rpt.).

BULB MITE (Rhizoglyphus echinopus) - CALIFORNIA - Heavy on Easter lily nursery stock roots at San Diego, San Diego County. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

EASTERN TENT CATERPILLAR (Malacosoma americanum) - FLORIDA - Adults taken in black-light trap at Gainesville, Alachua County. (Perry, Mead). GEORGIA - Infesting wild cherry and apple trees. (Coleman). VIRGINIA - Small tents noticeable on cherry in Montgomery, Roanoke, Bedford, Campbell, Charlotte, Halifax, Pittsylvania, and Botetourt Counties. (Isakson et al.). MARYLAND - First tents of season observed April 5 on wild cherry in Anne Arundel County. (U. Md., Ent. Dept.). NEW JERSEY - Larvae appearing on wild cherry in Hartford and Pemberton areas of Burlington County on April 4. (Ins.-Dis. Newsltr.). OHIO - First report of larval activity in Scioto County on April 3. (Mowbray). Hatch in progress in Washington County; small webs common on apple and wild cherry. Larvae not generally present in damaging numbers. (Racer, Rose). INDIANA - Egg hatch began in Ohio River areas. (Huber). Eggs beginning to hatch; larvae forming webs about the egg masses at Vincennes. (Dolphin, April 3). OKLAHOMA - Moderate to heavy, damaging peach and plum trees in Major, Garfield, and Mayes Counties; also, common on wild plum in northeast and east-central areas. (Okla. Coop. Sur.).

SPRING CANKERWORM (Paleacrita vernata) - WISCONSIN - Females noted on twigs of elm in Maxomanié area. No eggs observed. (Wis. Ins. Sur.). IOWA - Adults in tanglefoot bands at Oskaloosa, Mahaska County. (Iowa Ins. Sur.).

ELM BORER (Saperda tridentata) - IOWA - Larvae collected in elm bark at Oskaloosa, Mahaska County. (Iowa Ins. Sur.).

RED-HEADED ASH BORER (Neoclytus acuminatus) - OKLAHOMA - Adults active on elm in Payne County. (Okla. Coop. Sur.).

MAY BEETLES (Phyllophaga spp.) - OKLAHOMA - Emerging in moderate to heavy numbers in several areas of State. (Okla. Coop. Sur.).

ELM LEAF BEETLE (Pyrrhalta luteola) - OKLAHOMA - First adults of season noted in Beckham and Haskell Counties. (Okla. Coop. Sur.).

APHIDS - NEW MEXICO - Cinara sp. caused heavy honeydew on ponderosa pine in Albuquerque, Bernalillo County. (Heninger). OHIO - C. pini clusters of 25-30 first instars on terminal buds of Scotch pine in Wayne County, April 3. Early instars of Eulachnus agilis on Scotch pine in same area. (Campbell).

OAK LECANIUM (Lecanium quercifex) - GEORGIA - Heavy on oak trees in Tattnall County. (Johnston).

A MARGARODID SCALE (Matsucoccus paucicicatrices) - CALIFORNIA - All stages heavy on stands of pine at Challenge, Butte County. (Cal. Coop. Rpt.).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - CALIFORNIA - Medium on pine nursery stock in Valley Center, San Diego County. (Cal. Coop. Rpt.).

MAN AND ANIMALS

HEAD LOUSE (Pediculus humanus capitis) - CALIFORNIA - Unusually heavy on students at 3 schools in Anaheim; abated by treating. (Cal. Coop. Rpt.).

MOSQUITOES - COLORADO - Activity of first Culex tarsalis adults observed March 20 and increased week of March 27 near Windsor, Weld County. Adults of Anopheles earlei and Culiseta inornata taken in natural resting sites week of March 27. Larvae of Aedes increpitus fairly abundant in open marshy pools at Nunn, week of March 20. A few larvae of Aedes dorsalis on March 28 near Fort Collins. (Harmston). MINNESOTA - Metropolitan Mosquito Control District reported first hatch of Aedes in Twin City area occurred March 27. (Minn. Ins. Rpt.). LOUISIANA - Larval collections in Jefferson Parish contained Aedes vexans, Anopheles quadrimaculatus, Culex pipiens quinquefasciatus, C. restuans, and C. salinarius; adult activity increased slightly. Psorophora confinnis and Mansonia perturbans collected in light traps. (Stokes).

EYE GNATS (Hippelates spp.) - FLORIDA - Becoming a nuisance at Gainesville, Alachua County. (Mead).

SHORT-NOSED CATTLE LOUSE (Haematopinus eurysternus) - OKLAHOMA - Mainly this species, moderate to heavy on cattle in Bryan, Garvin, and Mayes Counties. (Okla. Coop. Sur.).

CATTLE GRUBS (Hypoderma spp.) - NORTH DAKOTA - Survey results from February through April at livestock auctions. Up to 3 per back of beef cattle at Dickinson on February 21; a third of the grubs had cut holes. At Dickinson and Mandan, 59 percent of the animals averaged 7.9 grubs per head. This compares with 34 percent averaging 9.4 grubs at the same locations last year. Highest populations at Dickinson; 1-25 grubs, average 7.9 per animal, infested 52 percent of beef animals. At Mandan, 1-15 grubs, average 4.4, infested 28 percent of beef animals. Low populations at Minot; 1-11 grubs, average 3.4 per animal, infested 13 percent. (Brandvik). WISCONSIN - Higher than normal in cattle in northern counties; 20-30 per animal in Marathon County. (Wis. Ins. Sur.).

HORN FLY (Haematobia irritans) - OKLAHOMA - Averaged 250 per head in Blaine County; 125 per head in Major County. (Okla. Coop. Sur.). MISSISSIPPI - Increased during past period in Oktibbeha and Lowndes Counties. Averaged approximately 200 flies per animal. (Dinkins). ALABAMA - Heavy and widespread on untreated animals in Mobile County. (Deakle et al.).

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U. S. April 2-8. Total of 61 cases reported in portion of Barrier Zone in Republic of Mexico March 26-April 1 as follows: Territorio sur de Baja California 25, Sonora 23, Chihuahua 3, Nuevo Leon 4, Tamaulipas 6. Fourteen cases in Mexico south of Barrier Zone. Barrier Zone is area where eradication operations are underway to prevent establishment of self-sustaining population in U. S. Sterile screw-worm flies released April 2-8: Texas 168,000; Arizona 40,000; Mexico 108,072,000. (Anim. Health Div.).

ROCKY MOUNTAIN WOOD TICK (Dermacentor andersoni) - COLORADO - Abundant in Poudre River area, Larimer County. (Wellso).

HOUSEHOLDS AND STRUCTURES

TERMITES (Reticulitermes sp.) - DELAWARE - Several spring flights observed this period. (Burbutis). VIRGINIA - Winged adults reported from Gordonsville, Orange County. (Isakson).

A TERMITE (Zootermopsis laticeps) - TEXAS - Collected from pecan tree in El Paso. (Dickson, Mar. 31). Previously recorded from this area in 1950. (PPC).

BENEFICIAL INSECTS

LADY BEETLES - CALIFORNIA - Lindorus lophanthae feeding on rose scale in boysenberry plantings at Cressy, Merced County. (Cal. Coop. Rpt.). COLORADO - Hippodamia convergens active in Larimer County alfalfa fields, but not numerous. (Simpson). KANSAS - Many adults of unspecified species present in wheat and alfalfa. (Simpson). OKLAHOMA - All stages of H. convergens numerous in wheat and alfalfa. Less Coleomegilla maculata fuscilabris adults in northeast and east-central areas. (Okla. Coop. Sur.). ARKANSAS - Coleomegilla maculata reproduction well underway; variable sized larvae in legumes and small grains in south, central, and east areas. (Ark. Ins. Sur.). INDIANA - Adalia bipunctata and Chilocorus stigma observed in apple trees in Vincennes area. (Dolphin, April 3).

GREEN LACEWINGS - ARKANSAS - Chrysopa spp. adults numerous but larvae very scarce in legumes and small grains in south and central areas. (Ark. Ins. Sur.). KANSAS - Adults very numerous in alfalfa, particularly where pea aphid populations high. (Simpson).

A BIG-EYED BUG (Geocoris punctipes) - ARKANSAS - Only adults in crimson clover in south area. (Ark. Ins. Sur.). UTAH - Geocoris sp. active in Hurricane area of Washington County. (Knowlton).

DAMSEL BUGS (Nabis spp.) - COLORADO - Fairly abundant in alfalfa and weeds in the Fort Collins area of Larimer County. (Simpson).

MINUTE FLOWER BUG (Orius insidiosus) - INDIANA - Associated with apple aphids on developing apple foliage. (Dolphin, April 3).

FLOWER FLIES - ARKANSAS - Only adults on wheat in Lincoln County. (Ark. Ins. Sur.). INDIANA - Active around aphid clusters on foliar terminals. Eggs of these flies common in immediate vicinity of aphids. (Dolphin, April 3). OHIO - Larvae and eggs present in about 20-30 percent of aphid colonies in Jackson County. (Rose).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

GRASSHOPPERS - OKLAHOMA - Egg pods averaged 0.25 per square foot at 8 rangeland stops in Beaver and Woodward Counties. Development ranged from coagulation to eye spots. First-instar Ageneotettix deorum and Aulocara ellioti ranged 3-5 per sweep in southwest grassland. First instar nymphs of a Melanoplus found in wheat and alfalfa margins in the same areas. (Okla. Coop. Sur.). KANSAS - First-instar nymphs in many alfalfa fields in Harper, Barber, Comanche, and Clark Counties. (Simpson).

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - Emergence increasing in experimental traps and cages in Maricopa County. First moth emergence from cages in Graham County occurred March 28 at Safford. (Ariz. Coop. Sur.).

CARIBBEAN FRUIT FLY (Anastrepha suspensa) - FLORIDA - Increased rapidly during past 2-3 weeks. Over 2,000 adults collected in 110 traps in Dade County March 18-24; following week 3,062 adults were trapped. Adults common in Lee, Manatee, Sarasota, Pinellas, and Highlands Counties. (Fla. Coop. Sur.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - FLORIDA - Ranged 5-20 mounds per acre in pastures at Groveland, Lake County. (Henderson, Mar. 30).

INSECT DETECTION

New State Record

A WALSHIID MOTH (Walshia miscecolorella) - NEBRASKA - Collected on sweetclover during September and October 1966 in 5 southeastern counties. Det. by R. W. Hodges. (p. 283).

New County Records

ALFALFA WEEVIL (Hypera postica) - INDIANA - Found in Clinton, Tipton, Howard, Miami, Cass, Carroll, and White Counties. (p. 277).

AN ERIOPHYID MITE (Eriophyes insidiosus) - CALIFORNIA - Collected from flowering peach in Madera County. (p. 283).

CORRECTIONS

CEIR 17(13):233 - Last paragraph - CITRUS MEALYBUG (Pseudococcus citri) should read Planococcus citri.

CEIR 17(13):235 - Fourth paragraph - A FULGORID PLANTHOPPER (Ormenia pruinosa) should read A FLATID PLANTHOPPER (Metcalfa pruinosa).

CEIR 17(13):230 - Last paragraph. BLACK PECAN APHID (Myzocallis caryaefoliae) killed several in New Jersey, should read BLACK PECAN APHID (Brachycaudus persicaecola killed).

CEIR 17(14):242 - NEVADA- CORN LEAF APHID (Rhopalosiphum maidis) should read ENGLISH GRAIN APHID (Macrosiphum avenae)

CEIR 17(14):242 - Under BURROWING STINK BUGS change Panagaeus to read Pangaeus.

CEIR 17(14):245 - WOOLLY APPLE APHID (Eriosoma langerum) should read Eriosoma lanigerum.

Weather continued from page 274.

40 m.p.h. (gusts to 50 m.p.h.) caused moderate to severe wind erosion. The weekend brought snow to the upper Great Lakes and to spots in the Northeast. Early in the week, Pacific air brought an inch or more of rain to western coastal areas with lighter amounts inland. The lower Colorado River Valley remained dry.

TEMPERATURE: Northerly winds held average temperatures to near normal in all the northern border States; temperatures dropped to the 20's east of the Rockies and freezing occurred as far south as the Ohio River and the southern Appalachians. Brisk southerly winds brought warm moist air over most of the Nation east of the Rocky Mountains. For the second or third week, much of the central and southern Plains averaged 10° to 15° warmer than normal. The clash of the cold and warm air masses produced a typical seesaw weather pattern. For instance, maximum temperatures at Washington, D.C., were 86° on Monday, 56° on Tuesday, 82° on Thursday and 61° on Friday. There was little day-to-day temperature change west of the Rockies where the weather averaged slightly cooler than normal. (Summary supplied by Environmental Data Service, ESSA).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1966
(continued from page 271)

HOUSEHOLDS AND STRUCTURES

Highlights:

COCKROACHES were the most troublesome pests in households and TERMITES were the most serious pests of structures over the country during 1966. ELM LEAF BEETLE was a household nuisance in several areas, but BOXELDER BUG was less of a nuisance in some States. EARWIGS continued to spread and were particularly troublesome in some areas. CLOVER MITE was a normal nuisance pest, especially in new housing developments.

BLACK CARPET BEETLE (*Attagenus piceus*) was a very frequent pest of clothing and furnishings in many homes in MARYLAND. Black carpet beetle was an important pest in CONNECTICUT and was frequently reported in homes in VERMONT. CIGARETTE BEETLE (*Lasioderma serricorne*) was dominant pest of foods in homes throughout ALABAMA. DERMESTID BEETLES (*Dermestes* spp.) were constant pests during the year in CALIFORNIA. A WEEVIL (*Trachyploeus bifoveolatus*) was a nuisance in households in western WASHINGTON throughout season. A JAPANESE WEEVIL (*Calomycterus setarius*) was collected during July in Johnson County for the first record in KANSAS; caused considerable annoyance to homeowners. STRAWBERRY ROOT WEEVIL (*Brachyrhinus ovatus*) adults migrated into houses and other protective structures from mid-July through August in OHIO. Fewer number of ASIATIC OAK WEEVIL (*Cyrtepidomus castaneus*) entered homes in VIRGINIA than last year. ELM LEAF BEETLE (*Pyrrhalta luteola*) caused the usual amount of annoyance to homeowners in KANSAS. In MARYLAND, elm leaf beetle adults entered homes and buildings during spring and fall months; occurrence was greater than in 1965 in NEW JERSEY. TULE BEETLE (*Agonum maculicolle*) was normal in CALIFORNIA. Several POWDER-POST BEETLES (*Lyctus* spp.) were household nuisances and caused severe damage to structures in California; BAMBOO POWDER-POST BEETLE (*Dinoderus minutus*) was an occasional pest, but not as frequent as some years in State. WHARF BORER (*Nacerdes melanura*) was abundant in areas of reconstruction in CONNECTICUT where wood and timbers had been buried in moist areas. Map C. *setarius*, p. 300

SMOKY-BROWN COCKROACH (*Periplaneta fuliginosa*) was collected in a house trailer in Amador County; for first record in CALIFORNIA; eradication treatment applied. GERMAN COCKROACH (*Blattella germanica*) and BROWN-BANDED COCKROACH (*Supella supellectilium*) were widespread and common in California. Several species harassed homeowners in several areas of TEXAS. Cockroaches caused usual amount of annoyance to homeowners in KANSAS. Pests were widespread in ALABAMA; German cockroach was the most important pest of the 5 species present. German cockroach and brown-banded cockroach infested numerous apartments, homes, and buildings in metropolitan areas of MARYLAND; some species increased slightly in CONNECTICUT and INDIANA. CRICKETS (*Gryllus* spp.) were extremely abundant from late August to mid-September in northern Indiana; up to 20 per square foot were observed in corn, soybeans, and along roadsides. Movement into homes caused considerable annoyance in many areas.

TERMITES - *Reticulitermes* species was abundant in CONNECTICUT. SUBTERRANEAN TERMITE swarms were very prevalent throughout NEW JERSEY and more common than in 1965. EASTERN SUBTERRANEAN TERMITE (*Reticulitermes flavipes*) was reported extensively in PENNSYLVANIA; increase was noted in the Harrisburg area. *Reticulitermes* species were the number one pest of structures throughout MARYLAND; winged forms during spring were above normal abundance. Termites were the most important structural insects in VIRGINIA. Eastern subterranean termite continued as major structural pest throughout ALABAMA. Winged forms in and near homes were present in Mellette, Butte, and Brown Counties, SOUTH DAKOTA. *Reticulitermes tibialis* is present every year in Helena, MONTANA; during 1966, it was reported in homes along the Clark Fork River and also from Billings, Roundup, and Ryegate.

WESTERN SUBTERRANEAN TERMITE (*R. hesperus*) and a TERMITE (*R. tibialis*) infestations were more abundant in NEVADA than last season, especially in Clark, Douglas, Humboldt, and Washoe Counties. WESTERN DRYWOOD TERMITE (*Incisitermes minor*) infested a home in Mineral County, Nevada, for a new county record. Western subterranean termite occurred frequently in CALIFORNIA; increasing its range and importance.

ODOROUS HOUSE ANT (*Tapinoma sessile*) invaded many residences in CALIFORNIA; CARPENTER ANTS (*Camponotus* spp.), were pests in northern California and warm weather provided a long season for ARGENTINE ANT (*Iridomyrmex humilis*). Carpenter ants annoyed homeowners in areas of TEXAS. Unspecified species caused usual amount of annoyance to homeowners in KANSAS. YELLOW ANTS (*Acanthomyops* spp.) were common in many homes in the spring and fall in VIRGINIA. LARGER YELLOW ANT (*A. interjectus*) swarms were prevalent during the fall months in NEW JERSEY, and PAVEMENT ANT (*Tetramorium caespitum*) was common throughout the State. *Camponotus* spp. and *T. caespitum* were abundant in CONNECTICUT.

CASEMAKING CLOTHES MOTH (*Tinea pellionella*) and WEBBING CLOTHES MOTH (*Tineola bisselliella*) were major pest of clothes, carpets, and upholstery materials in ALABAMA. Casemaking clothes moths annoyed homeowners in TEXAS. A PSYCHID MOTH (*Apteronia crenulella*) was observed near Pocatello, IDAHO, on alfalfa and in Boise, Burley, and Paris around houses. Larvae were abundant on buildings in Boise.

BOXELDER BUG (*Leptocoris trivittatus*) was a nuisance in several central NEW JERSEY counties; however, not as prevalent as in 1965. In INDIANA, populations were very low in 1966 and reports of adult migrations into homes were rare. Boxelder bug caused usual amount of annoyance to homeowners in KANSAS. A COREID BUG (*Arhyssus scutatus*) was widespread and heavier than for many years in CALIFORNIA. THRIPS caused usual amount of annoyance to homeowners in KANSAS. EUROPEAN EARWIG (*Forficula auricularia*) was a nuisance throughout CALIFORNIA; slowly spreading to new areas. Earwigs annoyed homeowners in several areas of TEXAS. European earwig was very abundant in CONNECTICUT. It appeared quite often in and around homes in VERMONT. Earwigs were particularly troublesome and reported from widely scattered localities in NEW HAMPSHIRE.

CLOVER MITE (*Bryobia praetiosa*) was a nuisance in many homes in VERMONT. Clover mite was troublesome throughout NEW JERSEY; as in previous years, the majority of reports were from housing developments. This pest entered homes and caused annoyances in many suburban areas in MARYLAND. Clover mite was the usual pest to homeowners in KANSAS, but was less numerous in WYOMING. Clover mite entered homes throughout IDAHO during March and April; many homes were treated. In CALIFORNIA, activity was about the same as in past years. MAPLE BLADDER-GALL MITE (*Vasates quadripedes*) continued to be a nuisance to householders in VERMONT. Numerous reports of MILLIPEDS entering homes in VIRGINIA during spring and fall.

STORED PRODUCTS

RED FLOUR BEETLE (*Tribolium castaneum*) and CONFUSED FLOUR BEETLE (*T. confusum*) were general pantry pests in CALIFORNIA. They also occurred in packaged dehydrated dog food containing cereal products early in the year. Other species reported from California were LESSER GRAIN BEETLE (*Rhyzopertha dominica*) and DERMESTIDS (*Trogoderma simplex* and *T. parabale*). A GRAIN BEETLE (*Cryptolestes* sp.), GRANARY WEEVIL (*Sitophilus granarius*), *R. dominica*, and SAW-TOOTHED GRAIN BEETLE (*Oryzaephilus surinamensis*) heavily infested stored barley and wheat in Pershing County, NEVADA. A DERMESTID (*T. parabale*) was the most common species in food in homes. A DARKLING BEETLE (*Tribolium madens*) was recorded for first time in WASHINGTON from an alfalfa leafcutting bee nest shelter in Franklin County; later collected in large quantities in Walla Walla and Moses Lake areas. LESSER MEALWORM (*Alphitobius diaperinus*) was heavy in poultry litter in Thurston County Washington; previously recorded from Pierce County. Confused flour beetle, red flour beetle, and saw-toothed grain beetle were general kitchen, elevator,

and granary pests in MONTANA. A severe infestation of saw-toothed grain beetle occurred in stored oats in Cass County, NORTH DAKOTA. A DARKLING BEETLE (*Cynaesus angustus*) was collected in a blacklight trap in a forest in Champaign County, ILLINOIS, June 14, 1966. This is the first record of species taken anywhere except in stored grain in State. DERMESTID BEETLES were more numerous in 1966 than for several years in packaged dried foods, in INDIANA. BEAN WEEVIL (*Acanthoscelides obtectus*) in beans from Beaver County, PENNSYLVANIA, while saw-toothed grain beetle was the most common pest of food in State. Confused flour beetle was noted in corn and small grain in Pennsylvania. Granary weevil seriously damaged stored barley in Montgomery County, MARYLAND. Saw-toothed grain beetle and INDIAN-MEAL MOTH (*Plodia interpunctella*) were most common species of stored products in CONNECTICUT. RICE WEEVIL (*Sitophilus oryzae*) was a serious pest of stored corn and grain sorghum in central and south ALABAMA.

MEDITERRANEAN FLOUR MOTH (*Anagasta kuehniella*) infested grain in Susquehanna County and bird seed in Northumberland County, PENNSYLVANIA. ANGOUMOIS GRAIN MOTH (*Sitotroga cerealella*) infested corn in Centre County, Pennsylvania. POTATO TUBERWORM (*Phtorimaea operculella*) infested stored potatoes on farms in 5 counties in MARYLAND. Indian-meal moth infested a variety of stored products including dry dog food and wild bird seed in suburban sections of Maryland. Angoumois grain moth was medium to heavy in farm stored corn in St. Marys and Wicomico Counties, Maryland, and damaged peanuts, corn, and grain sorghum in ALABAMA. ALMOND MOTH (*Cadra cautella*) was serious pest of stored peanuts in Alabama.

An undetermined PSOCID infested stored barley in Renville and Steele Counties, NORTH DAKOTA, during the fall.

BENEFICIAL INSECTS

In WASHINGTON, HONEY BEE (*Apis mellifera*) satisfactorily pollinated most commercial fruit trees in Washington, A LEAFCUTTING BEE (*Megachile rotundata*) was active and re-nested well during the generally favorable pollinating season on alfalfa, but possibly due to cool weather, sizable numbers of second-generation bees failed to materialize in most areas. The use of *M. rotundata* in NEVADA increased in seed alfalfa while that of ALKALI BEE (*Nomia melanderi*) decreased. Alkali bee nest sites were severely damaged in certain localities of WASHINGTON by 1.5 inch rainfall July 1-3.

Many parasitic hymenopterons controlled pests throughout the U.S. AN ICHNEUMON WASP (*Bathyplectes curculionis*) controlled about 70 percent of the alfalfa weevils in CALIFORNIA but controlled only 20-25 percent of the Egyptian alfalfa weevils. The situation was further complicated by Egyptian alfalfa weevil invading alfalfa weevil areas. In southeastern and northwestern areas of WYOMING, *B. curculionis* parasitized 4-25 percent of the alfalfa weevil larvae or an average of 12.3 percent. In ILLINOIS, an ENCARTID WASP (*Tetrastichus incertus*) controlled alfalfa weevils in 10 counties in the southern third of the State. In OREGON, *Trechmites insidiosus*, another ENCARTID WASP, attacked the hard shell stage of pear psylla in Jackson County, but hyperparasites were numerous later in the season.

The BRACONID WASPS were important in several States. *Aphidius pulcher*, a major aphid parasite in WASHINGTON, provided good control of pea aphids in several alfalfa fields in the Columbia Basin and in Walla Walla County. In NEVADA, *Aphidius* spp. reduced many pea aphid populations to noneconomic levels. *Lysiphlebus testaceipes* was active in some areas of OKLAHOMA during April and May. In ALABAMA, it was an especially important parasite of aphids infesting cotton, grain, and cole crops. In MARYLAND, above normal levels of *Apanteles congregatus* parasitized *Manduca* spp. on tobacco. A MINUTE EGG PARASITE (*Trichogramma minutum*) in ALABAMA was an important parasite of bollworms and tobacco budworm eggs

found in cotton. A EULOPHID WASP (Sympiesis viridula) parasitized 32 percent of the corn borer larvae in a single field in Cass County, NORTH DAKOTA. CICADA KILLER (Sphecius speciosus) was very conspicuous late in the summer in many central areas of MARYLAND.

DAMSEL BUGS (Nabis spp.) and other predators and parasites in NEVADA held most cotton pests below economic levels. Damsel bugs were very abundant on nearly all crops in WYOMING. Up to 75-100 nymphs and adults per 10 sweeps were found throughout the growing season of alfalfa. Quantities in legumes were higher than for 1965 in NEBRASKA.

BIG-EYED BUGS (Geocoris spp.) and other predators and parasites held most cotton pests below economic levels in NEVADA. G. punctipes attacked eggs and larvae of bollworms and tobacco budworms on cotton, corn, tomatoes, soybeans, and beans in ALABAMA. Geocoris sp. occurred frequently in large numbers on turf in several parts of RHODE ISLAND.

A FLOWER BUG (Orius insidiosus) reached high levels on alfalfa in May and June, but declined later. Orius spp. in Alabama attacked eggs and larvae of bollworms and tobacco budworms on cotton, corn, tomatoes, soybeans, and beans.

LADY BEETLES were reported from many States. Hippodamia sinuata, H. convergens, and other predators effectively controlled pea aphids in several seed alfalfa fields in Walla Walla and Franklin Counties, WASHINGTON. Lady beetles abounded in CALIFORNIA early in the year. Cryptolaemus montrouzieri effectively controlled citrophilus and citrus mealybug. VEDALIA (Rodolia cardinalis) did not control scales as effectively as in previous years. Lady beetles were active in NORTH DAKOTA alfalfa fields throughout the season. Hippodamia convergens was abundant on cereal crops in SOUTH DAKOTA; they were often 10 or more times as numerous than any spring population since 1963. Various species kept aphids at low levels in many areas of KANSAS throughout the season. A very high population during spring had a definite effect on pea aphids in alfalfa fields. H. convergens and Coleomegilla maculata were the most numerous species in ARKANSAS. Probably due to the low populations of pea aphids in ILLINOIS, Hippodamia spp. were rather low in clover and alfalfa fields this season. Cornfields in the northern half of the State, which were heavily infested with corn leaf aphid, had fairly high lady beetle populations. H. convergens and other predators in MARYLAND effectively reduced aphid populations on alfalfa and tobacco. Great numbers of H. convergens and Coleomegilla maculata fuscilabris in ALABAMA controlled aphids in many cotton, grain, and vegetable fields. A MELYRID BEETLE (Collops bipunctatus) preyed on aphids and alfalfa weevil larvae in Carbon County and on corn leaf aphids in the Havre area of MONTANA.

Three weevils effectively controlled weeds in CALIFORNIA. A PUNCTURE-VINE SEED WEEVIL (Microlarinus lareynii) and a PUNCTURE-VINE STEM WEEVIL (M. lypriformis) were well established and very effective statewide. A GORSE WEEVIL (Apion ulicis) was very active and effective in the north coast area. Beneficial dipterous species were reported from four States. About 2,000 adults of an ANTHOMYIID FLY (Hylemya seneciella) were released in Benton County, OREGON, for control of tansy ragwort during late June. FLOWER FLY larvae in MONTANA fed on aphids to a lesser degree in 1966 than in 1965. They were numerous wherever aphids were present in ARKANSAS during 1966. Larvae in ALABAMA were also important predators of aphids in grains, cotton, shade trees, and vegetables.

Greatest migratory flights of PAINTED LADY (Vanessa cardui) occurred in WASHINGTON since 1958; they were observed in early May. Larvae reduced thistles throughout the State. The heaviest populations in years appeared throughout western OREGON from April to August on several species of thistles and other weed plants. Larvae infested Scotch thistle in Ormsby and Washoe Counties, NEVADA; numerous on Canada thistle in most MONTANA counties. Numerous painted lady larvae fed on thistle in NEBRASKA. Other lepidopterous species were reported feeding on weeds. In CALIFORNIA, a CINNABAR MOTH (Tyria jacobaeae) established itself and built up well. In Oregon, an OECOPHORID MOTH (Agonopterix costosa), originating from Europe, was reared from gorse.

LACEWINGS and other predators and parasites in NEVADA, held most cotton pests below economic levels. Larvae and adults of GREEN LACEWINGS (Chrysopa spp.) were particularly numerous in alfalfa and corn during the growing season throughout WYOMING especially in Goshen, Platte, Fremont, Park, and Big Horn Counties. Light numbers of Chrysopa sp. appeared on alfalfa throughout the season in NORTH DAKOTA. Numbers of Chrysopa sp. on legumes were higher than that of 1965. Various species kept aphids at low levels in many areas of KANSAS throughout the season. GOLDEN-EYE LACEWING (Chrysopa oculata) was scarce in clover and alfalfa fields of ILLINOIS, but was fairly numerous in cornfields infested with aphids. Larvae of golden-eye lacewing were important predators of aphids infesting grains, cotton, shade trees, and vegetables in ALABAMA.

A PHYTOSEIID MITE (Typhlodromus occidentalis) prevented outbreaks of Tetranychus mcdanieli mites from occurring in many apple orchards of central WASHINGTON. In OREGON, they kept spider mites in check during most of the season in Umatilla County. AN ACARID MITE (Thyreophagus entomophagus) fed on euonymus scale eggs during September in Payne County, OKLAHOMA.

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

Highlights

GRASSHOPPERS caused damage in several scattered areas this season. Fall survey outlook indicates less extensive infestations for 1967. PINK BOLLWORM extended its range in California and was found for the first time in Nevada. GYPSY MOTH was detected in Michigan for the first time since 1961. RANGE CATERPILLAR infested 200,000 acres of rangeland in New Mexico. CEREAL LEAF BEETLE extended its range in Ohio and Indiana. MEDITERRANEAN FRUIT FLY was detected for the first time in Texas and was eradicated in 44 days. ORIENTAL FRUIT FLY adults were trapped in California.

GRASSHOPPERS damaged many rangeland areas in OKLAHOMA. In mid-July a cooperative control program was conducted on 22,000 acres of range and cropland in Comanche and Kiowa Counties. Grasshoppers caused considerable damage to alfalfa in Bernalillo, Valencia, and Rio Arriba Counties, NEW MEXICO; a rangeland control program was completed on 405,479 acres in Lea, Chaves, and Eddy Counties in July. Adult surveys in August and September indicated 2,167,000 acres were economically infested. If conditions are favorable next spring this could be a very serious problem. Several species infested 5,000 acres of range and cropland during June in Apache County, ARIZONA; controls were required. Populations appeared in many areas where they have been absent for the past 5 years in CALIFORNIA. In May, light populations began along the eastern foothills in the Sierras. During June and July spotted infestations developed statewide. The pests damaged rangeland primarily. Localized infestations occurred on grain, alfalfa, and a few shade trees and shrubs. Row crops, cotton, and fruit were slightly damaged. Populations in range areas were light to moderate in southeastern WASHINGTON, and were scattered lightly in the northeastern counties. In Columbia County, 7,000 acres of wheat were damaged. The fall adult survey indicated much lighter infestations than in several previous years. Early season surveys in IDAHO indicated hundreds of thousands of acres would require treatment to save rangeland and crops. Populations of 70-150 grasshoppers per square yard were common and counts exceeding 200 were often encountered in southern Idaho. About 225,000 acres were treated, but a drought suppressed most infestations. Fall rains improved conditions for egg deposition.

GRASSHOPPERS and MORMON CRICKET (Anabrus simplex) were lowest in several years in NEVADA, with less than 400 acres treated for grasshoppers in 1966. Surveys indicate infested acreage less; 6,430 acres for Mormon cricket and 52,640 acres for grasshoppers. Grasshopper numbers were relatively high and caused substantial damage in UTAH. Outbreaks occurred in several counties and were quite general

along the "Wasatch Front." Damage exceeded approximately 1 million dollars. Egg deposits represent potential grasshopper damage to at least 487,560 acres of cropland and rangeland during 1967. Populations were of economic importance in southeastern COLORADO. Melanoplus spp. were observed on wheat and several species occurred in alfalfa. Melanoplus nymphs and adults were numerous on alfalfa in northwestern WYOMING especially Fremont, Big Horn, and Park Counties, with 10-25 per square yard. Controls were necessary in Park and Big Horn Counties. Populations were not as severe on small grains as in 1965. Several economic infestations of rangeland grasshoppers occurred in Wyoming during 1966. Controls were undertaken in Natrona and Johnson Counties, and the Wind River Indian Reservation in Fremont County; total of 66,541 acres was treated. Adult survey indicates 1,711,000 acres of rangeland is economically infested. Drought accompanied by poor growth of range forage and coupled with the presence of grasshoppers resulted in more anxiety in 1966 than 1965 in MONTANA. Infestations were spotty; the greater concentrations infested weedy or overgrazed areas. Drought alone, without any grasshoppers, seemed to cause as much variation in range forage production as a heavy population of damaging grasshopper species. Some 475,000 acres were treated for grasshopper control in 1966.

Cold, wet spring reduced threat of grasshoppers in NORTH DAKOTA 1966 season. Adult cropland survey showed decrease in several areas and increase in south-central and northwestern areas. Light marginal damage occurred to row crops and late flax in southeast, where controls were applied. Rangeland infestations were noneconomic throughout State. Grasshoppers were noneconomic to light in nearly all areas of MINNESOTA. Unfavorable weather delayed hatch and retarded grasshopper activity through mid-June in SOUTH DAKOTA. During July, populations increased up to 50 per square yard in Tripp County. Melanoplus differentialis was very heavy along the Cheyenne River in Pennington County, where severe damage occurred by the end of July; some apple trees were defoliated. Fall survey indicated a threatening to severe potential on 82,000 acres of rangeland. Grasshoppers increased throughout NEBRASKA but were generally light to moderate; light crop damage was noted statewide. Should hatching and development conditions continue favorable, Nebraska could be faced with severe grasshopper problems in 1967. Controls were required on pastures and rangeland in KANSAS during summer. Fall adult survey revealed light to moderate populations in northeast, southeast, and south-central districts with remainder of State having noneconomic numbers.

Melanoplus nymphs were first observed in extreme southern MISSOURI early in May. Damage was confined to marginal rows of crops in southeast and southwest areas. Two small isolated areas in southwest and west-central had high numbers; remainder of State light and noneconomic. Populations were lightest in many years in WISCONSIN. Cold temperatures and the late cutting of first crop of alfalfa prolonged the hatch into late July. On September 1, only 50 percent had reached adult stage. Egg laying began in mid-September. Melanoplus spp. populations were lowest in many years in ILLINOIS. The annual adult survey made in 315 fields in 47 counties showed only 4 fields with threatening populations. There were 52,156 acres treated during 1966 compared with 64,570 acres in 1965. Melanoplus spp. were generally more abundant in INDIANA during 1966 than in past several years. Ranged 8-23 per square yard along roadsides in southeast and south-central districts from late July through mid-August. Nymphs began to increase on legume forage by late June in southern OHIO; 5 or more nymphs per sweep were reported from various parts of the State during July and August. Grasshoppers occurred throughout ALABAMA; most damage occurred on clover seedlings during fall. Grasshoppers were very heavy on corn and in pastures in northern VIRGINIA throughout August and September. Melanoplus spp. adults and nymphs caused damage to border rows of tobacco in Calvert County MARYLAND, and to soybeans in Talbot and Queen Annes Counties. For map of adult survey, Fall 1966, see 17(1):12.

During May, MORMON CRICKET (Anabrus simplex) bands were migrating from fields in 40 sections of the Midvale and Cambridge area, IDAHO. Bands varied from 20-400 acres in size with populations ranging 4-120 per square yard. Over 10,000 acres

were baited in these areas. Noneconomic Mormon cricket infestations were found in Daggett, Uintah, Millard, Sanpete, Tooele, San Juan, and Juab Counties, UTAH. Light infestations of Mormon cricket were detected in vicinity of Page in northern Coconino County, ARIZONA during May.

PINK BOLLWORM (*Pectinophora gossypiella*) severely infested the Palo Verde Valley, Riverside County and the Bard and Imperial Valleys, Imperial County of CALIFORNIA. It spread into the Coachella Valley, Riverside County; Lancaster, Los Angeles County; Cantil, Kern County; and the Needles and Sandy Valley, San Bernardino County. Controls were applied to 116,000 acres in the desert cotton area. No record of moths or larvae were taken in the San Joaquin Valley. Pink Bollworm was found in NEVADA for first record. Adults were collected in Nye and Clark Counties. Total collections as follows: Clark County-14 moths, 14 larvae; Nye County-10 moths, 4 larvae. Bloom infestations began to appear during early May in Maricopa County and eventually in all areas of ARIZONA. Mohave and Yavapai Counties were found infested for first time. Extremely heavy infestations occurred throughout Maricopa, Pinal, and Graham Counties. Generally light in Santa Cruz, Pima, Cochise and Greenlee Counties. Found infesting okra for first time in State. Late buildup occurred again in cotton-growing areas of Eddy, Chaves, Luna, and Dona Ana Counties, NEW MEXICO. Losses were not as severe as in 1965. An early frost during October damaged bolls and eliminated at least one generation of the pest. Pink bollworm was the most serious cotton insect in TEXAS; overwintered in exceptionally heavy numbers in the majority of fields in the Trans-Pecos area. Populations occasionally damaged cotton in OKLAHOMA. Inspections of gin trash and lint cleaners were negative in 6 counties in the southeastern tip of MISSOURI. Inspections using 3 methods were negative in ARKANSAS.

GYPSY MOTH (*Porthetria dispar*) was detected after three years of negative trapping in MICHIGAN. A larval infestation was discovered near the northeast corner of Duck Lake, during July, in Clarence Township, Calhoun County. Approximately 15,000 acres scheduled for treatment. Egg clusters were detected at 20 positive trap sites in 4 counties in PENNSYLVANIA. Scouting was conducted around trap sites in NEW JERSEY. Egg clusters were found in Monmouth, Sussex, and Ocean Counties. Only 3 counties remain negative. Defoliation was recorded for the first time since early 1920's. Gypsy moth was a major pest in CONNECTICUT, but fewer acres were defoliated than in past. General hatch occurred during mid-May in RHODE ISLAND. Oviposition was observed mid-July. Populations were apparently less heavy than in previous 2 years, probably due to high frequency of dipterous larval parasites. Was noneconomic in VERMONT in 1966. Gypsy moth defoliation was light in NEW HAMPSHIRE. BROWN-TAIL MOTH (*Nygmia phaeorrhoea*) infested only 9 of 192 towns scouted in New Hampshire; heavy infestations in MAINE defoliated oaks in Outer Brothers Island (Casco Bay) by late June and partially stripped oaks on two other islands during same period.

RANGE CATERPILLAR (*Hemileuca oliviae*) infested approximately 200,000 acres of rangeland in Colfax, Union, and Harding Counties, NEW MEXICO during July with 5-100 or more larvae per square yard. A cooperative control program was conducted on 177,074 acres of rangeland in Colfax and Union Counties. Larvae were moderate to heavy during late summer. Moth flights extended over a wide area in Colfax, Union, Harding, and Mora Counties. Larvae were also found near Encinoso, Lincoln County, during the fall, approximately 150 miles from other known infestations. An eradication treatment was applied to infestations of WESTERN GRAPE LEAF SKELETONIZER (*Harrisina brillians*) in Kings, Yolo, and Sacramento Counties, CALIFORNIA.

JAPANESE BEETLE (*Popillia japonica*) was detected in ALABAMA for first State record. New county records were established in several States; in general, populations were light in 1966.

EUROPEAN CHAFER (*Amphimallon majalis*) was recorded for the first time in MASSACHUSETTS during 1966; new county records totaled 12 in Massachusetts,

NEW YORK, and PENNSYLVANIA. For status of European chafer, see 17(3):35-36.

WHITE-FRINGED BEETLES heavily infested soybeans in Jackson County, FLORIDA, and were detected for new county records in ALABAMA, GEORGIA, LOUISIANA, ARKANSAS, MISSISSIPPI, and KENTUCKY.

BOLL WEEVIL COMPLEX (Anthonomus grandis complex) greatly reduced this year in ARIZONA, compared with 2 previous years. Light to moderate in a few fields in Stanfield area of Pinal County and in western Maricopa County.

CEREAL LEAF BEETLE (Oulema melanopus) continued to spread in OHIO and INDIANA; 4 specimens were collected in 2 counties in ILLINOIS. Cool weather delayed development in MICHIGAN by 2 weeks.

MEXICAN BEAN BEETLE (Epilachna varivestis) infested 18 properties at Boise, IDAHO; all were treated. An intensive survey of all bean fields near Rupert, Minidoka County, revealed only 1 or 2 plants in 6 fields infested. Infestations were controlled by burning.

IMPORTED FIRE ANT (Solenopsis saevissima richteri) was detected for new county records in FLORIDA, GEORGIA, ALABAMA, TEXAS, MISSISSIPPI, and TENNESSEE during 1966. It caused increased concern to farm operators and laborers in ALABAMA.

This was the second consecutive year in which no MEDITERRANEAN FRUIT FLY (Ceratitis capitata) was trapped in FLORIDA; however, it was the first year in which it had ever been found in TEXAS. On June 13, 1966, an adult was taken from a Steiner trap in Brownsville, Texas. The trap was in a calamondin tree within a few yards of the International Bridge. First larval infestation was found on June 16. Three adults were recorded from Matamoros, Tamaulipas, Mexico, on July 20. This area was included in the eradication effort, which was accomplished in 44 days from first discovery on June 13 to last specimen trapped on July 27.

A single male of ORIENTAL FRUIT FLY (Dacus dorsalis) was trapped in Lomita, Los Angeles County, CALIFORNIA, in June. Three male flies were trapped at Anaheim, Orange County, from early November to the end of the year. Eradication methods were applied in each area.

CITRUS WHITEFLY (Dialeurodes citri) eradication treatment was applied to infestations that occurred in dooryards of 3 cities in CALIFORNIA. No commercial acreages were infested.

WHITE GARDEN SNAIL (Theba pisana) infested 7 city blocks in Manhattan Beach, CALIFORNIA. Eradication treatment began after summer aestivation.

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1966

WEATHER OF THE YEAR 1966 1/

Highlights:

DROUGHTS: At the beginning of the year record to near record low reservoir and ground water supplies prevailed from northern West Virginia and northern and eastern Virginia to southeastern New York and central New England. Moderate precipitation during January and February only temporarily eased this Northeast Drought. Precipitation was much below normal during spring and summer and the drought intensified. By the end of August this meteorological drought was rated as extreme by the Palmer Index in northeastern West Virginia, northern and central Virginia, middle and northwestern Maryland, northern Delaware, south-central and eastern Pennsylvania, New Jersey, southeastern New York and southern New England. The Potomac River was at its lowest level in history. The area of severe drought gradually diminished with generous rains in September and October and by the end of the latter month was limited to a small area in south-central Pennsylvania.

Moderate to severe drought developed in east-central Indiana and parts of Ohio in July and moderate drought continued into September. A severe drought prevailed in the Nevada area until November. Deficient precipitation in the middle and southern Great Plains since September was detrimental to small grains.

WINTER TYPE STORMS: A coastal storm January 23-24 brought snowfall ranging from 0.5 to 1.5 feet in Maryland to over 2 feet in much of New York and New England. Only 2 to 3 days later another coastal storm covered northern Georgia with 4 inches of snow and ice, produced the most damaging ice storm in 50 years in coastal areas of the Carolinas, and left 0.5 to over 1 foot of snow from Virginia to eastern Canada. This stormy situation was climaxed in the closing days of January by the worst blizzard in the East since February 1958. From the lower Appalachians and Virginia to New York and New England snowfall was 1 to 3 feet, winds 30 to over 60 m.p.h., snow drifts to over 20 feet, and low temperatures from the midteens to subzero. Transportation was at a standstill, marooning thousands of persons and closing schools for several days to over a week. Most Federal offices and businesses were closed at least 1 day. There were over 50 deaths.

One of the most severe blizzards of record swept across the northern Great Plains into Minnesota on March 2-5. It continued unabated for 4 days in some areas. Snowfall was 1 to 3 feet, winds averaged 30 to 50 m.p.h. several days with gusts to over 100 m.p.h., snowfall drifted to over 30 feet, visibility was reduced to zero the 3rd and 4th, and temperatures dropped to 10°. At least 15 persons died, traffic was paralyzed, and over 100,000 head of livestock were lost. Another severe March storm moved northeastward from Kansas and Nebraska to Minnesota and Upper Michigan on the 22nd to 24th, with blizzard to near blizzard conditions. The rain, glaze, sleet, hail, and snow, with high winds, caused heavy damage in the central Great Plains.

Record-breaking snowstorms for so early in the season occurred in the central Rockies and north-central areas about mid-October and in the lower Ohio Valley and northern portions of the Gulf States November 2-3. A snowfall of 13 inches in 24 hours set a new November record at Louisville, Kentucky. On December 23 to 25, heavy snowfall of 0.5 to 2 feet fell from the Arkansas-Tennessee-North Carolina area to eastern Canada, disrupting Christmas holiday traffic.

MANY COLD AND HOT PERIODS: Arctic air was much more prevalent than usual over the northern Great Plains during January with record to near record number of

1/ Prepared by L. H. Seamon, Climatologist, Environmental Data Service, Environmental Science Service Administration, Washington, D. C.

days below zero at many stations. Fargo, North Dakota, and International Falls, Minnesota, reported that minimum temperatures on 30 of 31 days in January were below zero.

An unusually late spring freeze, May 9 to 11, damaged fruit and vegetables from North Carolina and Tennessee northward, with heaviest losses in Ohio and Michigan. Many stations from the upper Mississippi Valley to the Atlantic recorded their lowest temperatures of record for May. Among these were 26° at Lexington, Kentucky, on the 10th and 28° at Philadelphia, Pennsylvania, on the 11th.

In mid-September, record low temperatures for so early in the season occurred at many stations from the Great Lakes to New England. Another early freeze for so far south extended to central Florida and almost to the tip of southern Texas the beginning of November, with 28° on the 3rd at New Orleans for the lowest in November since 1871. On December 12 to 14, freezing temperatures extended to the extreme southern tip of Texas, along the gulf coast, and to central Florida. Temperatures as low as the middle 20's in the McAllen Weslaco-Harlingen area and 30° at Brownsville caused moderate to locally severe damage to most vegetables in southern Texas.

Temperatures rose to 100° or higher from the Dakotas and Wyoming eastward over the Mississippi and Ohio Valleys to the middle Atlantic coast the last part of June. The heat wave became widespread the first half of July. In the Northeast, temperatures reached 100° or higher on 5 days at many stations. Harrisburg, Pennsylvania, and New York, New York, reported 107° on July 3, alltime records. In July, temperatures reached 100° or higher on 24 days at Wichita Falls, Texas, and on 6 days at Huron, South Dakota. The heat wave was blamed for about 70 deaths in the St. Louis area where the maximum was over 100° each of the 6 days, July 9-14. The heat contributed to hundreds of other deaths elsewhere east of the Rockies. Santa Ana winds caused record high November temperatures in southern California on November 1, with 101° at Los Angeles (82-year record) and 97° at San Diego (95-year record)

NOTABLE TORNADOES: A tornado on March 3 moved across Mississippi. Its path lay through Jackson, the capital, where the greatest destruction occurred. For the State 67 persons were killed, 504 injured, and total damage was about \$18 million. On June 8, of 16 tornadoes in Oklahoma and Kansas, the one at Topeka, Kansas, was the most destructive. About 17 persons were killed and 550 injured as the twister caused almost total destruction along an 8-mile path in downtown Topeka. Damage estimates exceeded \$100 million, one of the highest totals of record for a single tornado.

A tornado moved eastward through extreme southeast Cleveland on September 29, injuring 22 persons and causing considerable damage.

On October 14 an outbreak of tornadoes occurred in Minnesota, Iowa, and Missouri, one of which virtually destroyed Belmond, Iowa. It killed 6 persons, injured 172, destroyed 119 buildings, and damaged 468 in that town. This was the most destructive late season tornado ever to occur in Iowa.

FLOODS: Severe flooding occurred in the Valley of the Red River of the North in March and flooding continued into April. Total damage was estimated at nearly \$8 million.

HURRICANES: Hurricane Alma moved inland just 20 miles east of Apalachicola, Florida, and June 9, the earliest hurricane of record to cross the U. S. coast line. Alma was blamed for 6 deaths in Florida. Scattered damage, mostly in Florida, totaled about \$10 million.

Hurricane Inez crossed extreme southern Florida on October 4. Rainfall ranged from 2 to over 4 inches and wind speeds reached 115 m.p.h. The hurricane was blamed for 3 deaths, 11 injuries, and property losses estimated at about \$5 million in Florida. Continued on bottom of page 297.

LIGHT TRAP COLLECTIONS

	Temperature of air (°F)	Precipitation (inches)	Type of trap	BL = blacklight NY = independent W = mercury vapor	Agrotis (black cutworm)	Carpocapsa pomonella (codling moth)	Choristagrotis auxiliaris (army cutworm)	Scythris (salt-marsh caterpillar)	Parona diffusa (wheat head armyworm)	Pectia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm)	Locustae comitalis (alfalfa cutworm)	Locustae statilis (garden webworm)	Locustae albicollis (beet webworm)	Maduca quinquemaculata (tomato hornworm)	Maduca sexta (tobacco hornworm)	Derania subulata (European corn borer)	Peridroma corticivorella (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudanarta unipuncta (armyworm)	Spodoptera eximia (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
FLORIDA Gainesville 4/5 Sanford 3-20-23 3/28-30 4/4-5					2 8 6 6				11 13 12 4	2	1 1 1	1 1 1								1 1 1				2 1 2	
MISSISSIPPI Rolling Fork 4/1-7 Stoneville 4/1-7 Tunica 4/1-7	54-86° 52-85° 47-86°	0 0 0	BL 2BL BL				11 55 7		2										6 2	1 99 18	51				
TEXAS Brownsville 4/1-7* *only 10 trap nights Waco 4/1-7	63-85°	0	2BL		12				17 37	5 3	91 74							2 24	2 2	3 69	1			21	
GEORGIA Tifton 3/29-4/5	45-85°	0.07	BL									1													

CROP PRODUCTION IN 1966 EXCEEDED ONLY BY LAST YEAR: The Crop Reporting Board of the U.S. Department of Agriculture reported that crop production in 1966 tied 1963 as the second highest of record, despite some damage from subfreezing temperatures, lack of moisture at times, and unusually high early summer temperatures. Several major fall maturing crops registered record or near record yields per acre as shower activity picked up early in August and temperatures turned cooler. Most northern States enjoyed long growing seasons as freezing temperatures held off until late crops matured. West of the Mississippi harvesting conditions were generally favorable except parts of Kansas and Nebraska, but in portions of the eastern Corn Belt, the South Atlantic and eastern South Central States conditions were less favorable.

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J. G. Conklin

A. H. Mason

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G. L. Nielsen

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RHODE ISLAND

J. A. Mathewson et al.

SOUTH DAKOTA

B. H. Kantack

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P. A. Jones

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F. W. Parker

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G. F. Knowlton

VERMONT

J. W. Scott

VIRGINIA
O. W. Isakson

WISCONSIN
M. S. Conrad

WASHINGTON
C. A. Johansen et al.

WYOMING
W. D. Marks

Included in the "Summary of Insect Conditions in the United States - 1966" are the following special reports:

1. The highlight section of Forest Insect Conditions in the United States - 1966, compiled by the Forest Service, U.S. Department of Agriculture.
2. Screw-worm (Cochliomyia hominivorax) Summary compiled by Animal Health Division, U.S. Department of Agriculture.
3. The highlight section of the weekly Weather summary for the United States - 1966, compiled by the Environmental Data Service, U. S. Department of Commerce.

HAWAII INSECT REPORT

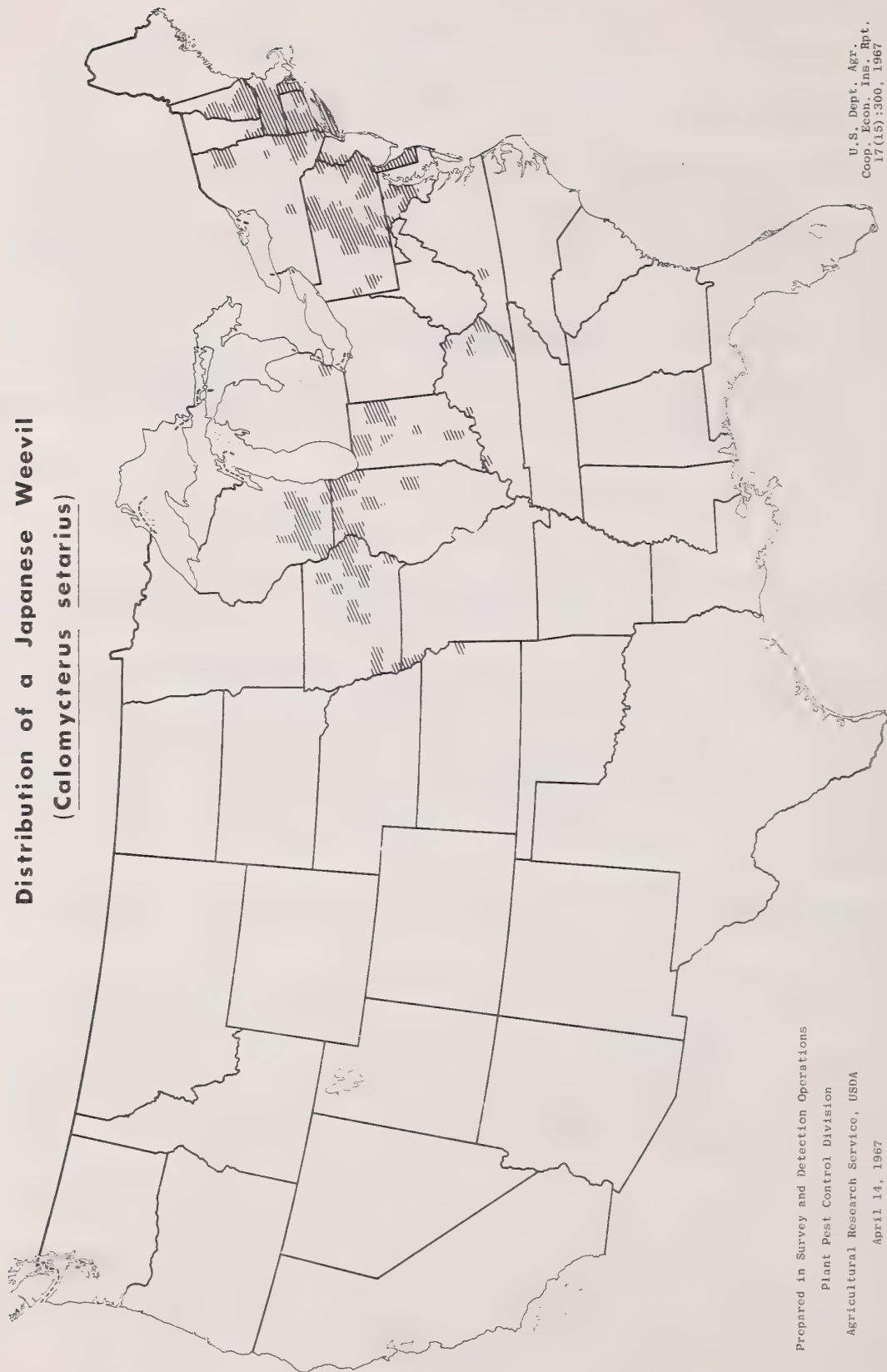
Fruits - CLOUDY-WINGED WHITEFLY (Dialeurodes citrifolii) heavy on citrus especially lime at Hilo, Hawaii. (Yoshioka). ORIENTAL FRUIT FLY (Dacus dorsalis) damage moderate to orange and grapefruit at Kokomo and Makawao, Maui. (Miyahira)

Ornamentals - On Oahu, all stages of A PLATASPID BUG (Coptosoma xanthogramma) medium on coral trees, sesban, and jade vine at Kaneohe; numerous adults on fire station walls at Hauula; adults heavy on mango flower stems and pigeon pea branches at Kailua. (Toyama, Mihata). All stages of BLACK TWIG BORER (Xylosandrus compactus) severe on dwarf pomegranate at a Hilo nursery, Hawaii. (Yoshioka). AN ARMORED SCALE (Phenacaspis cockerelli) very heavy on dragon trees at Waikiki, Honolulu, Oahu. (Kim). COTTONY-CUSHION SCALE (Icerya purchasi) heavy, as many as 70 nymphs on leaves on nettlespurge, at Kailua-Kona, Hawaii. On Kauai, light to medium on cassia and Florida beggarweed at Omao and Lawai. A few vedalia (Rodolia cardinalis) on infested plants. (Yoshioka, Au).

Forest and Shade Trees - A PSYLLID (Psylla uncatoides) adults in trace numbers (1 per 5 sweeps) on Formosa koa in the Pali Golf Course grounds in Kaneohe, Oahu. (Funaski).

Miscellaneous - Two adults of VAGRANT GRASSHOPPER (Schistocerca vaga) collected at Barking Sands, Mana, Kauai. These make the tenth specimens caught on Kauai since July, 1966. (Au). A large colony of mostly juvenile GIANT AFRICAN SNAIL (Achatina fulica) discovered on 2 acres near previous infestation at Kailua-Kona, Hawaii. Majority under rubbish and rock piles at a residence and on oyster plants and jade tree. Eradication in progress. On Kauai, 3-inch snail found at Poipu and 2 smaller ones at Kalaeo in empty produce crates from Honolulu. Baiting and surveillance continues. On Oahu and Maui, snails still active in wet areas. (Yoshioka, Au, Nakao).

Distribution of a Japanese Weevil
(*Calomycterus setarius*)



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Plant Pest Control Division
Agricultural Research Service, USDA
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Coop. Econ. Ins. Rpt.
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